

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

VERSUS TECHNOLOGY, INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Civil Action No. 04-1231--SLR
	)	
RADIANCE, INC.	)	
	)	
Defendant.	)	

**EXPERT REPORT OF NATHANIEL M. SIMS**

I, Nathaniel M. Sims, submit this expert report on behalf of Radianse, Inc. the Defendant in the above-cited litigation ("Radianse").

**GENERAL BACKGROUND AND QUALIFICATIONS**

1. My name is Nathaniel M. Sims, and I have been retained by Radianse as a technical expert in connection with the above-cited litigation. I am currently an Assistant Professor of Anesthesia at Harvard Medical School as well as a Physician Advisor to the Department of Biomedical Engineering of Massachusetts General Hospital, a part of Partners Healthcare System, Inc. In my role as a Physician Advisor I am involved in the development and management of biomedical devices with a specific focus on technology development and implementation in the field of patient safety, medical error reduction, and workforce productivity and satisfaction. I also operate a research and development laboratory that is principally funded from distributions of patent licensing royalty income received by MGH for inventions created in the laboratory in collaboration with others.

2. My qualifications are recited on the attached curriculum vitae, labeled as Exhibit A. A list of patents I was involved in the development of is attached as Exhibit B. Over the years my 'non-clinical' technology development activities, both self-directed and institutionally-directed, have resulted in broad awareness on my part of technology trends in my interest areas, and a host of close collaborations with academic and industrial engineers. In other areas of activity, I have been for several years a "Focus Area Leader" for CIMIT (Center for the Integration of Medicine and Innovative Technology), a Boston based non-profit consortium of hospitals, universities, and industry working on challenging medical innovation problems. Three projects in which I have been intensely involved include the "MGH/CIMIT Operating Room of the Future", the Department of Defense funded "Warrior Life Signs Detection System" (an R&D effort in the area of wearable physiological monitoring and health state assessment systems), and the "MGH/CIMIT Ambulatory Practice of the Future". See [www.cimit.org/utmon.html](http://www.cimit.org/utmon.html). Participation in these activities has broadened and extended the collaborations and broad technology awareness that have resulted from the operations of my research and development laboratory.

3. I earned a Bachelor of Arts from Harvard College. I earned a Medical Doctorate from Columbia University College of Physicians and Surgeon. I am a Board Certified Physician.

4. In 1989 Mr. James P. Welch and I were asked by Massachusetts General Hospital (MGH) to design and implement an affordable, 'flexible' multi-parameter vital signs monitoring system to address the growing problem of higher-acuity (i.e. more-ill) patients needing to be housed and cared for in the 'general care' areas of our hospital. MGH's goal was to affordably extend the availability of 'high tech' patient care devices, such as physiological monitoring systems and drug infusion pumps, from their prior concentration in the Intensive Care Units and

Operating Room areas of the Hospital, to more distributed patient care areas. To accomplish this objective by purchasing the typical, then-available technologies (fixed-in-position) in patient care area 'bedsides' would have been impractical (excessively complex). It also would have been prohibitively expensive, because of the need to scale-up the solution to hospitals with several million square feet of clinical real estate and many hundreds of patient rooms.

Additional challenges included the need to address the goal of continuously monitoring mobile patients where there is a low patient-to-caregiver ratio, coupled with the need for caregivers to rapidly locate the patients in case of physiological collapse detected by the vital signs monitoring system. Accordingly, during the period 1989-1992 we conceived, designed, reduced to practice, patented, licensed, obtained FDA 510(k) approval to market, implemented under human studies investigations, and then supported the marketing of a "Flexible Monitoring" system. The "Flexible Monitoring" system is a "network of portable patient monitoring devices" comprising a pool of rugged multi-parameter vital signs monitors. It also comprises a computer network having a specific topology, with the terminal portions of the network disposed in specific locations. For ambulatory patients equipped with wearable wireless vital signs monitors, a 'microcellular' array of wireless access points disposed in known locations was provided. The technology was thus designed and patented. The result includes U.S. Patent Number 5,319,363. The technology was also licensed to a medical device manufacturer (Protocol Systems, Inc. of Beaverton, OR, now WelchAllynMonitoring), received FDA 510(k) approval to market during approximately 1991 with product being first sold commercially during early 1992 and still sold worldwide to this day.

5. I have known and worked with Mr. Dempsey and the principals of Radianse, Inc. intermittently over 15 years regarding engineering and clinical issues where we found ourselves

working in the same area of interest, principally networked hospital patient physiological monitoring systems, wireless data networks, and indoor locating and positioning systems. I have served as a research principal investigator in a CIMIT-funded project for the Operating Room of the Future in which Radianse first deployed its Indoor Location System.

6. I have no business, financial, or equity interest in Radianse, Inc.

7. In relation to Versus and Precision Tracking FM, Inc., a review of my records indicate that in November 1991 I intensified a prior interest in "Auto-ID" or automatic identification technology, in part by attending a conference called "Scan-Tech" in Dallas Texas. At that conference I received promotional materials and met employees of Precision Tracking FM and Dallas Semiconductor, each then displaying technology solutions potentially relevant to the problem of locating mobile devices and assets (such as portable patient care devices) in indoor locations. My principal contacts included Michael L. Bolan and Stephen M. Curry at Dallas Semiconductor and Douglas Hellie at Precision Tracking FM. Among the materials I accumulated is a document from "Phone Vision from Precision Tracking FM, Inc." dated 7/14/93, entitled "Touch Path: The Low Cost Data Path for Touch Memory: Access Control, Time & Attendance, Personnel Locating, Equipment Locating" and a document from Ungermann-Bass regarding a SNMP-Managed Concentrator and SNMP concepts. Copies of these documents are attached at Exhibit C.

8. I have no business, financial, or equity interest in Versus.

9. I am being compensated for my services as an expert witness on a retainer basis.

#### **MATERIALS RELIED UPON**

10. In forming my opinion, I have reviewed the following materials:

- a) US Patents as referenced in Exhibit D of this report, including patent numbers RE 36,791 issued to Heller ("791 Patent") and 5,572,195 to Heller ("195 Patent");
- b) The file history of the prosecution before the US Patent and Trademark Office that lead to the issuance of US Patents RE 36,791 and 5,572,195 to Alan C. Heller.
- c) Radianse's proposed claim construction attached as Exhibit E.
- d) 35 USC §102 and 35 USC §103.
- e) The prepared invalidity claim charts attached as Exhibit F as well as the references cited therein including US Patent Numbers 4,611,198 issued to Levinson; 5,150,310 issued to Greenspun; 5,319,363 issued to Welch; 5,402,469 issued to Hopper; 5,426,425 issued to Conrad; and 5,455,851 issued to Chaco.
- f) My own research materials in the field of indoor positioning technologies (pertinent examples attached at Exhibit C).

11. In preparing this report I have solicited the assistance of two (2) individuals, both engineers, and both also R&D collaborators and co-inventors with me on at least one medical device or system which was granted a US Patent. The names of the individuals assisting me are James P Welch, of Tigard, OR and Michael H Wollowitz, of Chatham, NY. Mr. Welch is the named inventor on U.S. Patent Number 5,319,363.

12. In addition, I expect to consider and render opinions on other documents and evidence which have not yet been supplied by Radianse or Versus, or experts retained by same, pleadings, testimony, affidavits, expert reports, demonstrative evidence, and arguments offered

by parties in this matter. In light of information gathered from such material, I may supplement, and/or amend this report and these materials may also bear on any rebuttal report that I may provide.

#### **SUMMARY OF EXPECTED TESTIMONY AND OPINIONS**

13. I expect to testify about the invalidity of claims 25, 48, and 66 of U.S. Patent Number RE 36,791. I further expect to testify about the invalidity of claims 1 and 13 of U.S. Patent Number 5,572,195. Specifically, I expect to testify that, each and every element of claims 25 and 48 of the '791 patent is anticipated by U.S. Patent Nos. 4,611,198 and each and every element of claims 25, 48, and 66 is anticipated by U.S. Patent Number 5,319,363. I also expect to testify that each and every element of claims 1 and 13 of the '195 patent is anticipated by U.S. Patent Nos. 5,150,310; 5,402,469; 5,426,425; and 5,455,851. Finally, I expect to testify that claims 1 and 13 of the '195 patent are obvious in view of the Promotional Material published by Precision Tracking FM in 1993 in combination with the Promotional Material published by Ungermann-Bass as well as U.S. Patent No. 5,319,363 in combination with any of the anticipatory references.

#### **Discussion of the U.S. Patent No. RE 36,791**

14. U.S. Patent Number RE 36,791 reissued on July 25, 2000. The '791 patent is a reissue of Patent Number 5,119,104 filed on May 4, 1990.

15. The '791 patent discloses a location system adapted for use in environments subject to multipath effects, implementing object location by (a) time-of-arrival differentiation using tag transmissions received by multiple receivers (high resolution embodiment), or (b) area-detection using receivers that receive tag transmissions from an assigned area (low resolution embodiment) (See Summary of the Invention, Col. 1 of the '791 patent). The asserted claims 25,

48, and 66 of the '791 patent correspond to the low resolution embodiment with claims 25 and 66 directed to a system and claim 49 directed to a method.

16. I have reviewed Radianse's proposed construction of the claim language of claims 25, 48, and 66 of the '791 patent set forth in Exhibit E and agree with the construction.

17. I have reviewed U.S. Patent Number 4,611,198 ("Levinson"). The filing date of U.S. Patent Number 4,611,198 is September 19, 1985. Levinson therefore predates the '791 patent.

18. Levinson anticipates each and every element of claims 25 and 48 as shown in the invalidity claim chart of Exhibit F.

19. My own research in the field of indoor positioning technologies resulted in U.S. Patent Number 5,319,363 ("Welch") of which I am a co-inventor. Although the face of the U.S. Patent Number 5,319,363 lists priority going back to August 31, 1990, I can attest to the fact that we had developed the technology of the patent at least as early as November 10, 1989. As such, our date of invention predates the filing date of the '791 patent.

20. Welch anticipates each and every element of claims 25, 48, and 66 of the '791 patent as shown in the invalidity claim chart of Exhibit F.

#### **Discussion of U.S. Patent No. 5,572,195**

21. U.S. Patent Number 5,572,195 issued on November 5, 1996. The '195 patent was filed with the U.S. Patent Office on August 1, 1994.

22. The '195 patent discloses an object location, control, and tracking system implemented using an object identifier variable-based protocol, such as SNMP. Claims 1 and 13 have been asserted against Radianse. Claim 1 is directed to a system and claim 13 is directed to a method.

23. I have reviewed Radianse's proposed construction of the claim language of claims 1 and 13 of the '195 patent set forth in Exhibit E and agree with the construction.

24. I have reviewed U.S. Patent Number 5,150,310 ("Greenspun"). The filing date of U.S. Patent Number 5,150,310 is September 19, 1989. Greenspun therefore predates the '195 patent.

25. Greenspun anticipates each and every element of claims 1 and 13 as shown in the invalidity claim chart of Exhibit F.

26. I have reviewed U.S. Patent Number 5,402,469 ("Hopper"). The filing date of U.S. Patent Number 5,402,469 is November 9, 1992. Hopper therefore predates the '195 patent.

27. Hopper anticipates each and every element of claims 1 and 13 as shown in the invalidity claim chart of Exhibit F.

28. I have reviewed U.S. Patent Number 5,426,425 ("Conrad"). The filing date of U.S. Patent Number 5,426,425 is October 7, 1992. Conrad therefore predates the '195 patent.

29. Conrad anticipates each and every element of claims 1 and 13 as shown in the invalidity claim chart of Exhibit F.

30. I have reviewed U.S. Patent Number 5,455,851 ("Chaco"). The filing date of U.S. Patent Number 5,455,851 is July 2, 1993. Chaco therefore predates the '195 patent.

31. Chaco anticipates each and every element of claims 1 and 13 as shown in the invalidity claim chart of Exhibit F.

32. I have reviewed the Promotional Document entitled: "Touch Path: The Low Cost Data Path for Touch Memory: Access Control, Time & Attendance, Personnel Locating, Equipment Locating" dated July 14, 1993. This Promotional Document predates '195 patent.



33. I have reviewed the Promotional Material from Ungermann-Bass regarding SNMP having a copyright of 1992. This Promotional Material predates the '195 patent.

34. The '195 patent merely combines the features of SNMP with wireless transmission. As can be seen in the Promotional Document entitled: "Touch Path: The Low Cost Data Path for Touch Memory: Access Control, Time & Attendance, Personnel Locating, Equipment Locating," Precision Tracking FM, Inc. was marketing an infrared based tracking system. As can be seen from the Ungermann-Bass Promotional Materials, SNMP was a standard network protocol at the time. Indeed, the '195 patent appears to be nothing more than the system disclosed in Precision Tracking FM's document implemented using the standard SNMP networking protocol. The forgoing publications hence render obvious at least claims 1 and 13 of the '195 patent.

35. I am co-inventor of U.S. Patent Number 5,319,363 ("Welch"). I can attest to the fact that we had developed the technology of the patent at least as early as November 10, 1989. As such, our date of invention predates the filing date of the '791 patent.

36. Welch discloses the use of the standard SNMP networking protocol. Although Welch only discloses the use of radio frequency wireless transmissions, in view of the above anticipatory references it would have been obvious to implement infrared in the system described in Welch since it was commonplace at the time of the filing of the Welch patent. Hence, Welch renders obvious at least claims 1 and 13 of the '195 patent.

A handwritten signature in dark ink, reading "Nathaniel M. Sims". The signature is written in a cursive, flowing style. Below the signature is a horizontal line.

Nathaniel M. Sims, MD

Dated: September 30, 2005

**CERTIFICATE OF SERVICE**

I, Karen E. Keller, Esquire, hereby certify that on December 2, 2005, I caused to be electronically filed a true and correct copy of the foregoing document with the Clerk of the Court using CM/ECF, which will send notification that such filing is available for viewing and downloading to the following counsel of record:

George Pazuniak , Esquire  
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I further certify that copies of the foregoing document were served by hand delivery on the above-listed counsel of record.

YOUNG CONAWAY STARGATT & TAYLOR, LLP



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